Cancoppas LIMITED

Level Instrumentation

CATALOGUE



When you need quality process measurement, control and environmental instrumentation - Challenge us to find your solution

Cancoppas – Your solution provider



Challenge us to find your solution

Cancoppas – Giving you what you need, for the results you want.
Established in 1968 and incorporated in 1973, Cancoppas provides reliable and cost-effective process measurement and control instrumentation. With a highly capable technical staff we provide value added engineering, systems integration, total measurement, control and automation solutions. Whether you are in the industrial, commercial, research or government sectors, our products and integrated solutions will help you meet all your instrumentation and control needs.

Cancoppas – Committed to service and customer satisfaction
Cancoppas serves you from our centrally located 11,000 square foot facilities. We have what you need when you need it. Our fully integrated business system ensures that your order is delivered quickly and accurately and to your timetable. In addition, our knowledgeable sales force can recommend the product or service that perfectly fits your specific requirement. For maintenance and repair, our service department is equipped with a full range of calibration and test equipment to provide you with prompt, accurate and reliable in house or field service for our products and others.

Cancoppas – More than just an equipment supplier
For customers requiring more than standard off-the-shelf product selection, Cancoppas provides complete systems integration, engineering and commissioning combining consultative and broad based customer support. When you have a unique requirement, we will provide equipment customization to your exact specifications. Our services include control panel design, fabrication and assembly, along with mechanical fabrication and controls integration.

Cancoppas – Working to the highest standards
At Cancoppas, we ensure that the highest quality assurance standards are met or exceeded. We operate under best commercial practice and are closely affiliated with ISO9000 registered suppliers.

Selection Guide 4
Selection Overview 6
Rotary Switch 8
Tilt Switch 9
Diaphragm Switch 9
Vibratory Switch 9, 10
Float Switch 10
Magnetic Float Switch 10
Magnetic Float Multy Switch 11
Magnetic Float Continuous 11
Doppler Level Switch 11
Mechanical Continuous 12
Capacitance Continuous 12
Capacitance Switch 12
Ultrasonic Continuous Two-Part System 13
Ultrasonic Continuous Compact Transmitter 13
Hydrostatic Continuous 13, 14
Conductivity Switch 14
Ultrasonic Sludge Level Detector 14
Thermal Level Switch 15
Magnetostrictive 15
Radar 15
Accessories 16
Level Sensing Technology 18
Application Questionnaire Form 22

Level Instrumentation - Selection Guide

CATEGORY	Clean Fluids	Acids	Caustics	Low Specific Gravity	Shifting Specific Gravity	Low Dielectric Media >2.0	Shifting Dielectric
Magnetic Visual Indicator	✓	✓	✓	✓	☎	✓	✓
Magnetostrictive	✓	✓	✓	✗	✗	✓	✓
Float Switches	✓	✓	✓	✓	☎	✓	✓
Hydrostatic	✓	✓	✓	✓	✗	✓	✓
Mechanical Rotary	✗	✗	✗	✓	✓	✓	✓
Radar	✓	✓	✓	✓	✓	☎	☎
RF Capacitance Switch Single Point	✓	✓	✓	✓	✓	✓	✓
RF Capacitance Transmitter & Multipoint Switch	✓	✓	☎	✓	✓	✓	✗
Ultrasonic Contact Switch	✓	✓	✓	✓	✓	✓	✓
Ultrasonic Non-Contact Transmitter/Switch	✓	✓	✓	✓	✓	✓	✓
Ultrasonic Clamp on (non intrusive)	✓	✓	✓	✓	✓	✓	✓
Thermal Dispersion Switch	✓	✓	✓	✓	✓	✓	✓
Vibrating Fork	✓	✓	✓	✓	✓	✓	✓
Vibrating Rod	✗	✗	✗	✗	✗	✗	✗

✓ = GOOD ☎ = CALL US ✗ = Not Recommended

Level Instrumentation - Selection Guide

Entrained Air	Foam	Interface	Turbulence	Vapors	Dirty Fluids	Slurries	High % Solids	Coatings	Dry Bulk
✓	✓	✓	✓	✓	✗	✗	✗	✗	✗
✓	✓	✓	✓	✓	✗	✗	✗	✗	✗
✓	✓	✓	✓	✓	✗	✗	✗	✗	✗
☎	✓	☎	✓	✓	✓	✗	✗	✗	✗
✓	✗	✗	✗	✓	✗	✗	✗	✗	✓
✓	✓	✗	✓	✓	✓	✓	✓	✓	✗
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓	☎	☎	☎
☎	☎	☎	✓	✓	☎	☎	☎	☎	✗
✓	✗	✗	✓	☎	✓	✓	✓	✓	✗
✓	✓	✗	✓	☎	☎	✗	✗	✗	✗
✓	✓	✓	✓	✓	✓	✓	✓	✓	✗
✓	✓	✗	✗	✓	✗	☎	✗	✗	✗
✗	✗	✗	✗	✗	✗	✗	✗	✗	✓

✓ = GOOD ☎ = CALL US ✗ = Not Recommended

Level Instrumentation - Selection Overvew

TECHNOLOGY	ADVANTAGES	DISADVANTAGES
Magnetostrictive	•Limited motion •Few moving parts •Can measure interface	•Calibration changes with density •Build-up on float can cause calibration shift •High cost with long spans
Ultrasonic	•No moving parts hence no wear and tear •Non-contact technology •Easy Calibration	•Affected by powders, heavy vapors, surface turbulence and foam •Cannot operate in vacuum or high pressure •Needs good reflective surface •More position sensitive than other technologies •Can be affected by vapors, structural members, foam •Limited temperature & pressure ranges
Radar	•Non contact •Immune to most vapors/ physical characteristics of media •High accuracy •Ignores vapor space changes	•Expensive •Cannot be used for solids due to poor reflectivity •Deposits on antenna, multiple reflections can affect measurement •Cannot measure interface
Mechanical Rotary	•Low Cost	•Mechanical (moving parts) •Very high maintenance
Hydrostatic	•Can be externally mounted or retrofitted •Can be isolated from process using block valves •User familiarity •Can be calibrated from a pressure standard •Reasonable instrument cost	•Subject to errors due to changes in liquid density •Bottom mounted •Valving and piping increase cost of installation •Multiple fugitive emission points
Float	•Adaptable to wide variations in fluid densities •Can be used in extreme process conditions •Unlimited tank height •Can achieve high accuracy •Low cost if not remote reading	•Vulnerable to particulate or product deposition •Moving parts exposed to fluids •Limited pressure rating •Not very good in agitated vessels •Not suitable for granulars •High maintenance

Level Instrumentation - Selection Overvew

TECHNOLOGY	ADVANTAGES	DISADVANTAGES
BOB	•Level measurement independent of density •Wide range of granular size •Independent of moisture	•Mechanical with moving parts •Higher maintenance •Plumb bob (weight) sometimes trapped by the filling process •Moderate to high cost
Thermal Mass	•Very accurate •Stable •Good sensitivity	•Sensitive to fluid property changes
Capacitance	•Can operate under extreme temperature and pressure •By far the most versatile technology •Works with all types of materials •On-off or continuous measurement •Typically inexpensive.	•Intrusive measurement •Errors due to build up and varying dielectric strengths •Application sensitive •Insulating granular measurements requires special considerations
Laser	•Probably the best system for distance measurements •Non contact	•More suitable for long distance measurements •Reflections are very weak •Low resolution •Shadowing •Expensive.
Vibrating	•No calibration required •Can sense extremely light materials •Unaffected by electrical and physical properties	•Unpredictable with foam •Product build-up •Moving parts •Not very rugged
Conductive	•Low cost	•Conductive, non-coating liquids only •Insulating coatings can cause problems

ROTARY SWITCH

FEATURES
- Economical, compact and rugged
- Simple to install
- No calibration required
- Adjustable sensitivity
- De-energizing motor extends motor life
- Motor slip-clutch prevents gear damage

APPLICATIONS
- Small bins, hoppers and feeders containing food, seeds, chemicals and other powder and bulk solid materials

SPECIFICATIONS
Power Supply: 110/230/240 VAC 50/60 Hz
Switch Rating: 3A@ 250 VAC
Temperature: +20ºC to +60ºC
Power Consumption: 1.5 Watts
Process Connection: ¾" PF
Output: SPDT
Protection: NEMA 1
Weight: 0.35 kgs



MINI ROTARY

ROTARY SWITCH

FEATURES
- Rugged construction and simple, dependable design
- De-energizing motor for extended operation life
- Three bearing drive shaft assembly for reduced wear and increased reliability
- Internal, bi-directional clutch
- Various voltages available
- Explosion proof model
- Terminal strip for quick easy installation
- Interchangeable with other rotary units

APPLICATIONS
- Bulk solids including powder, pellets and granular materials
- Storage bins, vessels, chutes and conveyers
- Material density from 5 to over 100 lbs./ft^3
- Feed, grain, food, sand, gravel, concrete, aggregate, plastic, chemical, coal

SPECIFICATIONS
Power Supply: 120/240 VAC
Switch Rating: SPDT 15 Amp 120 VAC
Temperature: -40ºC to +149ºC
Process Connection: 1¼" NPT
Pressure: ½ micron, 30 PSI
Enclosure Type: Die cast Aluminium
Protection: NEMA 4,5,7,9 & 12
Approvals: Class I, Groups C & D, Class II Groups E, F & G
Shaft and Components: 316 SS



GR, GRX

ROTARY SWITCH

FEATURES
- Fail-safe circuitry
- Visual LED sensor status indication
- Normal and fault status contact
- De-energizing motor for extended operation life
- Three bearing drive shaft assembly for reduced wear and increased reliability
- Internal, bi-directional clutch
- Multiple voltages
- Interchangeable with other rotary units

APPLICATIONS
- Bulk solids including powder, pellets and granular materials
- Storage bins, vessels, chutes and conveyers
- Material density from 5 to over 100 lbs./ft^3
- Feed, grain, food, sand, gravel, concrete, aggregate, plastic, chemical, coal

SPECIFICATIONS
Power Supply: 24/120/240 VAC
Switch Rating: DPDT 10 Amp 250 VAC; SPDT supervisory 10 Amp 250 VAC
Temperature: -40ºC to +85ºC
Process Connection: 1¼" NPT
Pressure: ½ micron, 30 PSI
Enclosure Type: Die cast Aluminum, USDA approved powder coat finish
Protection: 4X, 5, 9 and 12
Approvals: Class II, Groups E, F, & G
Shaft and Components: 316 SS



GRII MAXIMA

Level Instrumentation

TILT SWITCH

FEATURES
- Economical high level point detection
- Rugged construction and easy installation
- Simple design with one moving part
- Switch activated at 15 degrees
- Stainless Steel paddle options available

APPLICATIONS
- High level detection for dense bulk solids
- Bins, vessels, chutes, silos or over conveyers and open pits where conventional level devices cannot be mounted
- Material density of 15 lbs./ft^3 and greater
- Grain, sand, gravel, concrete, aggregate and coal

SPECIFICATIONS
Switch Rating: 15 Amps @ 125, 250 or 480 VAC, 1/8 HP @ 125 VAC, ¼ HP @ 250 VAC, ½ A @ 125 VDC, ¼ A @ 250 VDC

Temperature: -40ºC to +149ºC

Process Connection: Suspended by flexible hanger

Enclosure Type: Die cast Aluminum



TILT SWITCH

DIAPHRAGM SWITCH

FEATURES
- Rugged construction and simple design
- Very economical point level detection
- Neoprene or Silicone diaphragm material
- Internal or external mount
- Multiple voltages
- Explosion proof models

APPLICATIONS
- Point level detection for free flowing dry materials
- Storage bins, vessels, and some plugged chute applications
- Material density over 20 lbs./ft^3
- Feed, seed, grain, food, rubber, plastics, light powders and granules

SPECIFICATIONS
Switch Rating: 15 Amps @ 125, 250 or 480 VAC, 1/8 HP @ 125 VAC, ¼ HP @ 250 VAC, ½ A @ 125 VDC, ¼ A @ 250 VDC

Temperature: -40ºC to +149ºC

Process Connection: Internal or external, 16 ga. Galvanized mounting plate

Enclosure Type: Die cast Aluminum

Protection: NEMA 4X, 5, 9 and 12

Approvals: Class II, Groups E, F, & G



DIAPHRAGM SWITCH

VIBRATORY SWITCH

FEATURES
- No moving parts
- Self-cleaning for most medium
- Stainless Steel vibrating section
- Solid rod or flexible cable extension up to 20 m
- Plastic or Aluminum housing
- High or low fail safe mode
- Explosion proof models
- Selectable switching delay

APPLICATIONS
- Practically any granular materials and powders with min. 3.2 lbs./ft^3 bulk density
- Grain, flour, plastic granules, cement, fly ash, etc.

SPECIFICATIONS
Power Supply: 16-40V AC / 19-55V DC / 85 - 265V AC / 120-375V DC

Temperature: -40ºC to +160ºC

Pressure: max. 25 bar

Process Connection: 1½"

Output: Relay (SPDT) or electronic switch (SPST)

Protection: IP 65

Approvals: ATEXII1/2D



NIVOCONT R

Level Instrumentation

VIBRATORY SWITCH

FEATURES
- No moving parts
- Self-cleaning for most medium
- High immunity against vibrations
- Stainless Steel and ECTFE coated probes
- Solid rod extension up to 3m
- Various output configurations
- Selectable density
- High or low fail-safe mode
- Plastic, Aluminum or Stainless Steel housing
- Explosion proof models

APPLICATIONS
- Most liquids with max. 10.000 mm^2/s viscosity
- Corrosive, thick, turbulent, flowing liquids
- Powders and light granules with min. density 3.2 $lbs./ft^3$

SPECIFICATIONS
Power Supply: 20-255V AC / 20-60V DC

Temperature: -40ºC to +130ºC

Pressure: max. 40 bar

Process Connection: 1" flanges, hygienic fittings

Output: 1 or 2 SPDT relays, 2-wire AC or DC, PNP, NPN

Protection: IP 67 or IP 68

Approvals: EEx ia IIC T4., T6



NIVOSWITCH

FLOAT SWITCH

FEATURES
- Low cost Polypropylene level switch
- Hermetically moulded, double chamber
- Mercury free operated micro switch
- Direct pump control up to 1.1 kW
- Adjustable switch differential
- Low specific weight of floating body

APPLICATIONS
- Level switch from drinking water to sewage
- Pump protection in small pipes
- Fail-safe indication and pump control

SPECIFICATIONS
Switch Rating: 250 V AC, 15 A

Temperature: -20ºC to +80ºC

Pressure: max. 5 bar

Protection: IP 68



NIVOFLOAT

MAGNETIC FLOAT SWITCH

FEATURES
- Available in small, medium or large sizes
- Top, bottom or side installation
- Variety of stem and float material combinations
- High resistance to vibration and shock
- Easily interchangeable between NO & NC
- Combined temperature and level switch versions

APPLICATIONS
- High and low level control in tanks
- Use with latching relay, for pump control
- Use with dual alarm relay, for high / low alarm
- 90 degree design for OEM applications
- Completely potted for rugged conditions
- Co-generation pump control
- Back-up pumps

SPECIFICATIONS
Switch Rating: 0.5 amps resistive, 250 V maximum

Temperature: from -400ºC to +1490ºC

Pressure: 600 psi maximum in Stainless

Process Connection: From tube end to 2" NPT and flanged versions

Material: SS, PVC, Buna, Brass, Kynar, Nylon



SINGLE ACTIVATION FLOAT

Level Instrumentation

MAGNETIC FLOAT MULTI SWITCH

FEATURES
- Combined temperature and level switch versions
- RTD's on/off or T/C temperature sensors
- 90 deg. probe available
- Available with vents and filter
- Slosh shields available
- Sliding stem available on most models
- Extra long units can be compression fitting joined

APPLICATIONS
- Interface level for hydrocarbons with water
- Level plus alarm indication
- Co-generation pump control
- Back-up pumps

SPECIFICATIONS
Switch Rating: 0.5A resistive, 250 V maximum

Temperature: from -400ºC to +1490ºC

Pressure: 600 psi maximum in Stainless

Process Connection: From tube to 2" NPT and flanged versions

Material: SS, PVC, Buna, Brass, Kynar, Nylon



MULTI ACTIVATION FLOAT

MAGNETIC FLOAT CONTINUOUS

FEATURES
- Day tanks for co-generation, most vessels
- Drum level indicators fits standard drums
- Standard lengths up to 19 feet
- 0 to 5 VDC, 0 to 10 VDC, 4-20 mA outputs available
- Local or remote readings, analog or digital
- Probe tube F 0.50", 0.625", 1" or 1.25"
- Many process connection options
- Sensing voltage - 20 VDC Max

APPLICATIONS
- Drum level control
- Pump control

SPECIFICATIONS
Power Supply: optional

Switch Rating: 0.5 amps @ 36 V

Temperature: +148.9ºC maximum

Pressure: 600 psi maximum in Stainless

Process Connection: ½" to 2" NPT and flange versions

Output: 0 to 5 VDC, 0 to 10 VDC, 4-20 mA and SPDT

Material: SS, Brass, Buna



CONTINUOUS TRANSDUCER

DOPPLER LEVEL SWITCH

FEATURES
- Non-invasive point level detection
- Relay or 2 wire loop powered
- Microprocessor controlled
- Auto calibrate 'wet' or 'dry'
- Alarm 'wet' or 'dry'
- Single button set-up
- Repeatability ± 1 mm
- Installation self check routine

APPLICATIONS
- Metal or Glass liquid or slurry tanks of diameter^3 300mm
- Wall thickness 2.5 to 40 mm

SPECIFICATIONS
Power Supply: 18-36 V DC

Switch Rating:
30 V DC, 1A or loop powered

Temperature: -40ºC to +100ºC

Mounting: Adhesion type Aluminum mounting

Output: PF contacts or 4-20mA

Protection: IP68

Approvals:
Zone '0' Eex ia IIC T6



A6-PUL-600

Level Instrumentation

MECHANICAL CONTINUOUS

FEATURES

- No field calibration or adjustment required
- Advanced microprocessor based system with built-in measurement reliability for one to 128 vessels
- Minimal ongoing operation and maintenance cost
- Explosion proof rating
- RS 485 network with wiring distance up to 4.000 ft
- Simple daisy chain wiring makes for easy installation
- Wireless solutions available
- Built in diagnostics

APPLICATIONS

- Inventory measurement system for solid, liquid, and slurry materials
- Dusty and demanding applications where ultrasonic, radar and light beam products won't work
- Plastics, chemicals, coal, concrete, food ingredients, pharmaceuticals, feed/grain and aggregates

SPECIFICATIONS

Power Supply: 120/230 VAC 50/60 Hz

Temperature: -40ºC to +85ºC (electronics with heater) +260ºC max (operating)

Process Connection: 3"-8 NPT

Measurement Range: 200'

Measurement Rate: 2' per second

Accuracy: 0.1%

Enclosure: Molded Polypropylene

Protection: NEMA 4, 5, 9, 12

Approvals: Explosion Proof, Class II Group E, F, & G



SMARTBOB II

CAPACITANCE CONTINUOUS

FEATURES

- 4-20 mA loop powered
- Microprocessor based
- Non-interactive zero and span push button calibration
- Aluminum, Stainless and PVC ex proof housings
- Standard NPT, flange and special fittings
- Fully or partly insulated probes
- Selectable sensitivity
- For metallic and non metallic tanks
- Combined level & temperature versions available
- Single, dual rod and concentric tube versions
- Rod and cable versions up to 20 m

APPLICATIONS

- Water and water based liquids, organic acids, oils and fuels
- Conductive and non-conductive fluids
- Liquids, powders, granules with E>2 relative dielectric constant
- Pharmaceutical, waste water, storage, chemical holding tanks
- Temperatures up to 200°C, vacuum and pressure up to 500 psi

SPECIFICATIONS

Power Supply: 12VDC-36 VDC

Output: 4-20 mA, loop powered

RTD Versions: 3 wire 100W

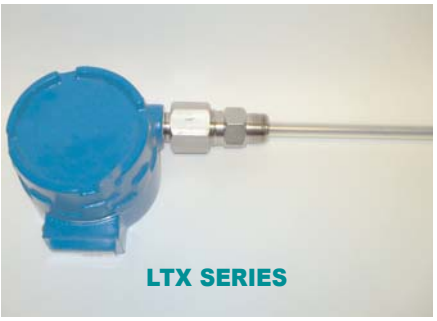
Temperature: -40°C to 70°C (operating), 200°C maximum (process)

Pressure: up to 500 psig

Process Connection: ¾",1 ½ NPT

Protection: NEMA4X

Approvals: Class I, II, Div 2 Gr. B, C, D, E, F & G



LTX SERIES

CAPACITANCE SWITCH

FEATURES

- Unique detector circuit senses capacitance changes < 1 pf
- Probes operate at approx. 6 kHz and do not generate rf
- Fail safe fault detection monitoring
- Non-intrusive flush mount version available
- Pro shield protects against false indications from material buildup
- Simple, precise "Quick Set" calibration for low, medium, or high sensitivity settings
- Highly abrasion resistant and inexpensive Delrin probes standard
- Functions in both dry solid or liquid explosion proof and food grade applications.

APPLICATIONS

- Point level detection for solids, liquids and slurries
- Bins, vessels, tanks, chutes and conveyors
- Plastics, chemicals, coal/fly ash, concrete, food, pharma, feed/grain, mining, foundries, wood/paper processing

SPECIFICATIONS

Power Supply: 120/240 VAC, 12/24 VDC

Temperature: -40° to +85°C (Electronics)

Pressure: 500 psig.

Output: DPDT relay 10 Amp at 250 VAC

Process Connection: ¾", 1 ¼" NPT, sanitary flange or flush mount (non-invasive)

Protection: NEMA 4X

Approvals: Explosion proof Clayss II Group E,F & G



PRO SERIES

Level Instrumentation

ULTRASONIC CONTINUOUS TWO-PART SYSTEM

FEATURES
- Accurate, repeatable, non-contact level metering
- Narrow 5º beam angle
- Fully temperature compensated
- Excellent signal processing via QUEST + software
- PP, PVDF as well as flush flange mounting Teflon and Stainless Steel sensors
- Secondary lightning protection
- Explosion proof models

APPLICATIONS
- Practically any liquid or free flowing solids
- Volume or weight calculation
- Open channel flow measurement
- Reliable measurement even under extreme conditions with vapours/fumes, stirrers, foam on chemicals or dust during pneumatic filling of powders

SPECIFICATIONS
Power Supply:
24, 110, 230V AC or 24V DC
Temperature: -30ºC to +100ºC
Pressure: 0.3 to 6 bar
Measuring Range: 0.2 to 25m liquids / 0.6 to 70m solids
Outputs:
4-20mA, up to 8 relays, RS485
Protection: IP 65 or IP 68
Approvals: Eex ia IIB T5/T6 Class 1, div. 2, Class II, div. 1 / Dust Ex Zone 10



SENSONAR NIVOSONAR

ULTRASONIC CONTINUOUS COMPACT TRANSMITTER

FEATURES
- Economical, standalone, non-contact level metering
- Narrow 5º beam angle
- Fully temperature compensated
- Excellent signal processing via QUEST + software
- PP, PVDF, PTFE and Stainless Steel transducers for liquids, foam faced transducers for solids
- Optional field indicator and plug-in programmer/display
- Secondary lightning protection
- Plastic or Aluminum housing

APPLICATIONS
- Practically any liquids or free flowing solids
- Volume calculation
- Open channel flow measurement
- Reliable measurement in challenging applications with vapours/fumes, stirrers, foam on chemicals or dust during pneumatic filling of powders

SPECIFICATIONS
Power Supply:
85-255V AC / 10.5-40V DC / 10.5-28V AC, 2/4 wire version
Temperature: -30ºC to +100ºC
Pressure: 0.3 to 3 bar
Measuring Range: 0.2 to 25m for liquids, 0.5 to 50m for solids
Output:
4-20mA, relay, RS485, HART
Protection: IP 67



ECHOTREK

HYDROSTATIC CONTINUOUS

FEATURES
- Two-wire submersible transmitter
- Stainless Steel body
- Up to 200m range
- Reverse polarity protection
- Optional lightning protection
- Accuracy: 0.5%

APPLICATIONS
- Borehole transmitter for the water industry
- Also for small diameter pipes

SPECIFICATIONS
Power Supply: 9-30V DC
Temperature: -10ºC to +60ºC
Output: 4-20 mA or 1-10V
Protection: IP 68



NIVOPRESS NP

Level Instrumentation

HYDROSTATIC CONTINUOUS

FEATURES
- Two-wire programmmable transmitter
- Ceramic diaphragm (AL2O3)
- 8 ranges starting at 0.1 bar
- Scalable analogue output
- Programmable damping
- Secondary lightning protection
- High overload capability
- High accuracy <0.2%
- Wide temperature ranges

APPLICATIONS
- Most liquids and masses in tanks and vessels
- Chemicals with dense vapour or gas layers above the surface
- Foaming liquids
- Viscous or corrosive materials

SPECIFICATIONS
Power Supply: 12-30V DC
Temperature: -30 °C to 100 °C
Pressure: max. 20 bar
Outputs: 4-20 mA or 0-10V DC
Process Connection: 11/2" or flanges or hygienic fittings
Protection: IP 65
Approvals: EEx ia IIC T4, T6



NIVOPRESS NT

CONDUCTIVITY SWITCH

FEATURES
- Low cost level switch
- Limit switch or differential switch versions
- High or low fail-safe mode
- All wetted parts Stainless Steel
- Compact unit with two independent relays
- Separate probe and relay unit

APPLICATIONS
- Conductive liquids with min. $2x10^{-5}$ S/cm conductivity
- Fail-safe indication and pump control
- Chemical and water industry

SPECIFICATIONS
Power Supply:
24, 110, 230V AC
Temperature: -20ºC to +200ºC
Pressure: max. 16 bar
Outputs: SPDT, 250V AC, 8A
Process Connection: 3/8", 1½"
Protection: IP 65



NIVOCONT C

ULTRASONIC SLUDGE LEVEL DETECTOR

FEATURES
- 32 bit DSP Microprocessor
- Low cost single & multiple tank configurations
- No moving parts, no maintenance required
- Ease of set-up and operation
- Configure up to four transducers with 4-20mA output and four status relays
- Operator control of critical signal parameters for maximum accuracy
- Swing bracket assembly accommodates passing surface skimmer
- Application specific operating frequencies
- Hazardous area, extreme temperature & chemical resistant transducers available
- Automatic temperature compensation
- Optional wireless signal transmission

APPLICATIONS
- Primary & Secondary Clarifiers in waste water treatment plants
- Gravity Thickeners
- Dissolved Air Flotation Thickeners
- Reactor/Alum Clarifiers
- Liquid level in storage vessels

SPECIFICATIONS
Power Supply: 110/ 220 VAC
Temperature: -40°C to +50°C
Outputs: 4-20 mA, Four relays, RS232/485 interface with DCS
Protection: NEMA 4X
Beamwidth: 6-degree full beam, 3-degree half beam
Minimum range: 1 to 328 ft.
Range accuracy: 0.1-ft. (0.03m)
Distance of Transducer from Processor: 1500 ft.
Sensor: Single beam, underwater acoustic



AYSIX BINMINDER

Cancoppas Limited **1-800-595-0514** **www.Cancoppas.com**

Level Instrumentation

THERMAL LEVEL SWITCH

FEATURES
- Simple to install & low in cost
- No moving parts, maintenance free reliability
- Optimal temperature compensation - unaffected by temperature gradient
- Choice of output signal
- Chain of 8 LED's, Integrated flow rate/set point indication
- Fast response time for flow or level (adjustable from 1-10 seconds)
- Excellent low flow sensitivity
- Can be coated for aggressive mediums
- Insensitive to dirt and most particles
- Available in ex. proof version
- Available in threaded, flange, sanitary and adjustable insertion length connections

APPLICATIONS
- Monitor and control the flow of liquid, air, and gas in pipes and ducts.
- Single point level control of liquid
- Interface detection between mediums.
- Detect flow and level of liquids and gas in hazardous environments

SPECIFICATIONS
Power Supply:
12VDC, 85-240 V AC
Current Consumption: Max 1 VA
Output:
SPDT relay 5 Amps at 250 VAC
Temperature:
-10°C to 120°C (operating)
Pressure: up to 4400 psig
Process Connection:
½ " to 1 ½ NPT, flange, sanitary
Protection: NEMA4X



CF THERMAL LEVEL SWITCH

MAGNETOSTRICTIVE

FEATURES
- Two-wire compact transmitter
- ± 0.4 mm repeateability
- ± 1 mm accuracy
- Wetted parts stainless steel or plastic
- Unique probe design
- 3.7 m probe length as max.
- Explosion-proof models

APPLICATIONS
- Liquids with min 0.5 kg/dm3 density
- Flammable fluids and solvents
- Chemicals, solvents, hydrocarbons
- For custody transfer

SPECIFICATIONS
Power supply: 12-36V DC
Temperature: -40 °C to +130 °C
Pressure: max. 25 bar
Measuring range: 0.5 - 3.7 m
Output: 4-20 mA
Process connection:
1", 2" or flanges
Protection: IP 67
Approvals: EEx ia IIB T5



NIVOTRACK

RADAR

FEATURES
- Very low noise performance
- Unaffected by buildup on the rod antenna
- Self adjusting pulse amplitude and width to target distance and reflection properties
- Simple push-button calibration (accurate)
- Output 4-20 mA (Isolated on 4 wire models only)
- Optional RS232 or RS485 communications
- Optional calibration diagnostics & data logging software
- PLC compatible (Modbus RTU)

APPLICATIONS
- Food and Beverages
- Water / Wastewater
- Chemicals with vapors
- Oils

SPECIFICATIONS
Power supply: 12 to 30 VDC, 0.07 A max @ 24 VDC 115VAC 60Hz or 230VAC 50Hz (+/-20%) 1.7 VA
Temperature: -40 °C to 60 °C
Pressure: 1-10 bar
Measuring range: up to 30 m
Output: 4-20 mA, Optional RS232 or RS485 communications port
Process connection: 2" NPT
Protection: IP 65



AYSIX ABM RADAR

Accessories

Characteristics	Universal Programmable Digital Panel Meter	Universal Programmable Convertor	Bar Graph Indicator	Multizone Indicator
Number of Simultaneous Inputs	One	One	One or two	Up to 8
Input Types				
DC				
mA	Yes	Yes	Yes	Yes
Volts	Yes	Yes	Yes	Yes
Millivolts	Yes	Yes	Yes	Yes
Temperature				
RTD	Yes	Yes	Yes	Yes
Thermocouple	Yes	Yes	Yes	Yes
Resistance				
Potentiometer	Yes	Yes	Yes	Yes
Variable Resistor	Yes	Yes	Yes	Yes
Logic (Programmable)				
Reset	Yes	-	-	-
Hold	Yes	-	-	-
Number of Simultaneous Outputs	Up to 8	-	-	-
Output Types				
Analogue mA	Yes	Yes	Yes	Yes
Relay	Two/Four	Two	Two/Four	Two
Digital	Modbus	Modbus	RS232/485	RS232/485
Mounting	1/8 Din	Din Rail	Panel	1/8 Din
Supply				
24VDC	Yes	Yes	Yes	Yes
120VAC	Yes	Yes	Yes	Yes
Sampling Time	Programmable	Programmable	Programmable	-
Linearization	21 point	21 point	32 point	-
Square Root Extraction	Yes	Yes	Yes, cube root, 5/2th	-
Zero Drift Compensation	Yes	Yes	-	-
Self-Calibration	Yes	Yes	-	-
Self Diagnosis	Yes	Yes	-	-
Display				
Electroluminescent	14 mm	-	5 digit	-
Bargraph with Programmable scale factor	Yes	-	Yes, 100 segment	-
Configuration	front keypad	front keypad	front keypad	front keypad
Sensor Rupture Detection	-	Yes	Yes	-
Special Features			Maths function Fully scalable Measured/derived value display	Heterogeneous inputs Manual/ auto scanning Up to 10 freely configurable alarms

Characteristics	Display and Alarm Controller	Level Indicators	Multi Function Programmable Loop Controller	PID Fuzzy Controller
Number of Simultaneous Inputs	6 or 16	One	Up to 8 analogue & 32 digital	Up to 2 analogue & 3 digital
Input Types				
DC				
mA	Yes	Yes	Yes	Yes
Volts	Yes	-	Yes	Yes
Millivolts	Yes	Yes	Yes	Yes
Temperature				
RTD	Yes	Yes	Programmable	Yes
Thermocouple	Yes	Yes	-	Yes
Resistance				
Potentiometer	Yes	-	Programmable	Yes
Variable Resistor	Yes	-	-	Yes
Logic (Programmable)				
Reset	-	Yes	Programmable	Programmable
Hold	-	Yes	-	-
Number of Simultaneous Outputs	Upto 8	-	-	-
Output Types				
Analogue mA	Yes	Yes	Yes	Yes
Relay	Two-3 Transistor per Input Channel	Two	Two/Four	Two
Digital	RS485 Dual Modbus	RS485 Modbus	Modbus	RS485 Modbus
Mounting	19" Rack/ Din Rail	Panel or Surface	Panel	Panel
Supply				
24VDC	Yes	Yes or Internal Lithium	Yes	Yes
120VAC	Yes	Yes	Yes	Yes
Sampling Time	Manual or Automatic	-	Programmable	100/ 500 ms
Linearization	-	25 point	Multi Point	-
Square Root Extraction	-	-	Yes, cube root, 5/2th	-
Zero Drift Compensation	-	-	-	-
Self-Calibration	-	-	-	-
Self Diagnosis	-	-	-	-
Display				
Electroluminescent	Display & Alarm	LCD	Yes	Yes
Bargraph with Programmable Scale Factor	-	-	-	-
Configuration	Front Keypad	-	Front Keypad	Front Keypad
Sensor Rupture Detection	-	-	Yes	-
Special Features	Strain Gauge input 3 fully configurable transistor relays per input channel Heterogeneous inputs Manual/ auto scanning Up to 128 multidrop connections	DC Pulse input Optional PID/manual control	Up to 4 control loops User programmable with extensive function blocks 12 resident preprogrammed control-strategies Single Loop Controller, mini DCS or part of a DCS Operator, start-up and engineer levels Maximum openness and integrability with 4 digital communications lines	Remote set point, frequency inputs Advanced P.I.D. for analogue, time proportioning & valve control Configurable alarms Maths package RS485 master/slave communications Fuzzy and adaptive tuning to set P.I.D. parameters

Level Instrumentation

Although many older and traditional methods of measuring level are still in use, there are many more complex and difficult applications that require unique and sometimes sophisticated solutions. The first requirement is to identify if the customer needs a point level or continuous measurement or a combination of both. With the wide variety of level measurement technologies available to choose from, identifying the appropriate one for the intended application becomes critical.

Cancoppas Limited not only offers a wide range of level measuring instruments to choose from but its engineering and service departments are always available to help you select the technology that best suits your needs. We will also provide start up and after sales support if required.

Level Sensing Technology

Level sensors divide into two categories of measurement: point level switches and continuous level monitors. Point level sensors are usually contact instruments. They are simple devices for determining whether there is a presence or absence of product at a specific point in a vessel. Depending on where these are installed, they can signal when a vessel is full, empty, or at some level in between. This type of sensor includes ultrasonic gap switches, rotary paddle switches for dry bulk solids, capacitance probes, conductivity probes, vibration probes for both solids and liquids and horizontal and vertical single and multi float level switches.

Continuous level sensors include contact and non-contact instruments. Contact instruments consist of weight measuring devices such as load cells, hydro-static pressure sensors, capacitance probes, electro-mechanical devices with a release and retract bob sensor, guided radar and magnetostrictive sensors.

Non contact level sensors include ultrasonic, open air radar, laser and even nuclear.

All of these (except nuclear) measure the distance from the sensor at the top of the vessel to a point on the surface of the material.

Magnetostrictive:

The device consists of a magnetostrictive wire in the stem and a permanent magnet inside the float. The float is the only moving part that travels vertically on the stem. Once a pulse current is induced from the end of the magnetostrictive wire, a tubular magnetic field emanates. As the float travels, torsional vibration is launched by the interaction between the float magnetic field and the magnetostrictive wire. The float position is determined by measuring the lapse of time from the launching of the torsional vibration to the return of the signal.

Ultrasonic:

Ultrasonic level instruments use sound waves to determine level. A piezoelectric crystal inside the transducer mounted on top of the tank converts electrical pulses into sound energy that travels in the form of a wave at the established frequency and at a constant speed in a given medium. The sound waves are emitted in bursts and received back at the transducer as echoes. The instrument measures the time for the bursts to travel down to the reflecting surface and return. This time will be proportional to the distance from the transducer to the surface and can be used to determine the level in the tank.
An ultrasonic gap technique is an alternative way to measure point level with low-viscosity liquids. A transmit crystal is activated on one side of a "measurement gap" and a receive crystal listens on the opposite side. The signal from the receiving crystal is analyzed for the presence or absence of tank contents in the measurement gap.

Radar:

Radar (sometimes referred to as microwave) uses high frequency electromagnetic waves in the GHz range that are beamed downward from a sensor located on top of the vessel. The sensor receives back a portion of the energy that is reflected off the surface of the measured medium. Travel time for the signal (called the time of flight) is used to determine level. The non-invasive radar technologies are frequency modulated continuous wave (FMCW) and pulse radar. The invasive type uses a cable or rod as a wave-guide and extends down into the tank's contents to near its bottom. In the frequency-modulated continuous wave (FMCW) technology, a sensor oscillator on top of the tank sends down a linear frequency sweep, at a fixed bandwidth and sweep time. The reflected radar signal is delayed in proportion to the distance to the level surface. Its frequency is different from that of the transmitted signal, and the two signals blend into a new frequency proportional to distance. That new frequency is converted into a very accurate measure of liquid level. The second non-invasive radar technology, pulsed radar or pulsed time of flight operates on a principle very similar to that of the ultrasonic pulsed method. Where ultrasonic sensor transmits its pulses and calculates the level based on the speed of sound, pulsed radar also transmits its pulses towards its liquid level target at the speed of light. The transit time of the pulse's return is calculated based on the speed of light to obtain a level measurement.

Consequently conditions that affect the speed of sound used in ultrasonic level measurement such as variations in pressure, vacuum, temperature do not affect the speed of light used in radar level measurement.

Guided wave radar (GWR) is an invasive method that uses a rod or cable to guide the microwaves as it passes down from the sensor into the material being measured. The basis for GWR is time domain reflectometry (TDR).

The sensor transmits a microwave pulse along the surface of a stainless steel cable. When the pulse reaches the measured material, the pulse is reflected back up the cable to the sensor. The pulse transmit time is measured and used to calculate the distance to the product surface.

Mechanical Rotary:

Rotary paddles are one of the oldest types of level sensors. They are easy to use, reliable, and applicable to all kinds of dry bulk materials such as flakes, pellets, or powders. These units have a small electric motor to turn a shaft with one to three vanes or paddles. If the shaft turns freely, no material is present. If the paddles encounter material, the shaft stalls and signals material presence at that level in the vessel. Higher-end units not only indicate material presence, but also have various "fail-safe" mechanisms to detect when the device is not working properly due to power failure or other problems.

Hydrostatic:

One of the oldest and most common methods of measuring liquid level is to measure the pressure exerted by a column (or head) of liquid in the vessel on the sensor. The sensor converts hydrostatic pressure into current signals proportional to the liquid level. A semiconductor transducer containing oil and a metal or ceramic sealing diaphragm is employed to achieve accuracy and durability. In order to compensate for atmospheric pressure the cable contains a hollow "breathing" tube. The hydrostatic pressure being exerted depends on the height of the liquid column as well as its specific gravity.

Float:

These level sensors contain hermetically sealed reed switches in the stem, and a permanent magnet in the float. As the float rises, falls or tilts with the level of the liquid, the magnet in the float activates the reed switch.

BOB:

Bob measuring systems are primarily used for measuring bulk solids in silos but can be outfitted to measure liquids. These devices are typically mounted at the top of a storage silo and mechanically lower a weighted cable into the vessel. As the weighted cable descends a microprocessor
measures the amount of cable released. When the weighted cable makes contact with the surface of the product, the cable displacement is digitally transmitted and the cable retracts to the neutral
position on top of the vessel.

Dust, fumes, humidity, temperature, material density or its dielectric properties do not affect these devices. Weight and cable systems require no calibration and work on virtually any material with minimal contact. Utilizing modern advances in micro controllers and optical technologies has resulted in exceptional resolution, accuracy and torque control.

Thermal Mass:

These devices utilize the thermal dispersion principle of the dissipation of heat by a liquid to detect the presence or absence of a liquid as compared with air. The sensor contains a resistor in the form of a thermistor. The thermistor acts as a heater when voltage is applied to it. It also detects heat and converts heat into an electrical signal. When the heat generated by the thermistor is dissipated by liquid, a switch output occurs.

Capacitance:

Capacitance often referred to RF (radio frequency) technology uses the electrical characteristics of a capacitor to detect or measure the level of liquids, slurries, granulars or interfaces contained in a vessel. A jacketed or bare conductive sensing electrode (probe) is inserted into the tank to act as one conductor of the capacitor. The metal wall of the tank acts as the other. For non-metallic and plastic tanks, capacitance probes with a dual probe system exist where the second probe is used as the other capacitor conductor. The capacitance level sensor measures the change in capacitance that occurs when the tank level changes and the tank contents rise or descend along the sensing probe. This capacitance is measured to provide a direct linear measurement of tank level or a switch contact

Laser:

The laser liquid level instrument generates an optical pulse. This pulse is reflected off an object or liquid and returns to the system receiver. A high-speed counter measures the time of flight from the start pulse to the return pulse. This time is used to determine the distance from the sensor to the material.

Vibrating:

The probe vibrates using piezoelectric element at the end of the probe. This piezoelectric element sets up a vibrational frequency. Contact with the material dampens the probe's vibration. This change is detected by an acceleration pickup and converted to a relay output. Single-rod units are used in solids, while tuning-fork probes can be used in liquids or solids. Vibrating probes are typically mounted on the top or side of storage vessels for dry bulk materials or liquids. This all-electronic point-level technology has two advantages. One is that it does not require calibration for the particular material. The other is that these probes can sense extremely lightweight materials such as EPS or fluffy regrind typically down to densities of 2 to 3 lb./cu ft, although some instruments can sense material as light as 1.3 to 1.5 lb./cu ft.

Conductive:

The conductance method of liquid level measurement is based on the electrical conductance of the measured material, which is usually a liquid that can conduct a current with a low voltage source (normally <20 V). One, two or more electrodes are arranged above the conductive fluid that is to be detected. If the filling material reaches the electrodes and makes contact, the circuit between the electrodes is closed and a switching signal is triggered. Such probes are generally used for point level detection, and the detected point can be the interface between a conductive and non conductive liquid.

Application Questionnaire Form

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Fax. 905-569-6246

FROM_____
COMPANY_____
_____
PHONE_____FAX_____
DATE_____

MEASURING TASK	TANK/SILO DATA		
❑ Continuous level	**HEIGHT:** **DIAMETER:**		
❑ Point level	**Measuring range**	Min:	Max:
Material to be measured:	❑ Open tank/silo	❑ Sanitary	❑ Closed tank/silo
Concentration/Granulate size:	❑ Indoors	❑ Outdoors	❑ Underground
Number of measuring points:	❑ Metal tank/silo	❑ Plastic tank/silo	❑ Concrete tank/silo
APPLICATION REQUIREMENTS	**PROCESS CONDITIONS**		
❑ Display	**Pressure**	Min:	Max:
❑ Analogue output	**Temperature**	Min:	Max:
Number of switching points:	❑ Fixtures		❑ Agitator/stirrer
Required mechanical protection:	❑ Dust		❑ Vapour
AREA CLASSIFICATION	❑ Build-up		❑ Abrasive
❑ General purpose ❑ Class I ❑ Class II	❑ Thin/light foam		❑ Thick/heavy foam
❑ Division 1 ❑ Division 2	❑ Moderate waves		❑ Strong waves
MEASURING METHOD	**Filling process**		
❑ Capacitance ❑ Hydrostatic	❑ Gravity		❑ Pneumatic
❑ Conductivity ❑ Magnetorestrictive	❑ From the top		❑ From the side
❑ Smart Bob ❑ Ultrasonic ❑ Radar	**Ambient conditions**		
❑ Float ❑ Vibration ❑ Other	❑ Temperature		❑ Humidity
SKETCH OF THE APPLICATION:	❑ Corrosive		

Notes

Cancoppas LIMITED

When you need quality process measurement, control and environmental instrumentation

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LEVEL
- ❑ Magnetostrictive
- ❑ Ultrasonic
- ❑ Radar
- ❑ Mechanical Rotary
- ❑ Hydrostatic
- ❑ Float
- ❑ BOB
- ❑ Thermal Mass
- ❑ Ultrasonic Gap
- ❑ Capacitance
- ❑ Laser
- ❑ Vibrating
- ❑ Conductive

TEMPERATURE
- ❑ Switches
- ❑ Sensors
- ❑ Thermowells
- ❑ Transmitters

VALVE CONTROL
- ❑ Positioners
- ❑ Analog Feedback
- ❑ Limit Switches
- ❑ Parts

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- ❑ Differential Pressure
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- ❑ Interface Level
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- ❑ Residual Chlorine
- ❑ Samplers
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GAS DETECTION
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- ❑ Oxygen

PANEL INSTRUMENTS
- ❑ Universal Indicators
- ❑ DIN Size Controllers
- ❑ Data Aquisition Systems
- ❑ Analog Indicators
- ❑ Data Loggers
- ❑ Signal Conditioners

PROCESS CONTROLLERS
- ❑ Multi/Single loop
- ❑ On-Off
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- ❑ Remote Terminal Unit

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- ❑ Maintenance Contracts
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- ❑ PLC Programming
- ❑ Design and Integration
- ❑ “Turn Key” System

Cancoppas provides quality instrumentation solutions that increase your productivity and efficiency.

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